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Dinand Lamberts

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EXAMINER

BERNSTEIN, DANIEL A

ART UNIT

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/553,405	<b>Applicant(s)</b> LAMBERTS ET AL.	
	<b>Examiner</b> DANIEL A. BERNSTEIN	<b>Art Unit</b> 3743	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-5 and 10-23 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-5 and 10-23 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 October 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____.  |

*Response to Arguments*

1. Applicant's arguments filed 11/13/2008 have been fully considered but they are not persuasive. The applicant argued that Weber does not teach a gas burner because the apparatus of Weber is a gas-fueled **infrared heater**. This argument is non-persuasive because an infrared heater as described by Weber is considered by one of ordinary skill in the art to be a gas burner. The main reason why a an infrared heater is considered a gas burner is simply because when gas and air mix in Weber's apparatus a condition arises where combustion of gas and air occurs. When a fuel such as "gas" and an oxidant such as "air" combust, the gas and air are "burning". This type of apparatus is usually referred to as a "gas burner". Also, Weber explicitly teaches a "gas burner", Col. 3 lines 60-65).

2. The applicant further argues that Weber does not teach a metal burner membrane. This argument is non-persuasive, because the definition of a membrane is a porous structure and Weber clearly teaches a porous metal structure.

3. The base of the metal membrane is where the membrane attaches to 13 in Fig. 1 of Weber. Fig. 2 of Weber teaches the limitations of R-base, a transition region and a closing section because a semi-circle has a radius of curvature at the base that is equal to the radius of curvature in the transition region where it nears the top portion of the circle. The applicant never claims that the R-transition is smaller than R-base, actually the claim states that r-transition is larger than zero and smaller than or **equal** to R-base. Claim 1 is very broadly recites R-base and R-transition and it is the examiner's position that these claim limitations describe, in the broadest reasonable interpretation, a semi-circle. The applicant argues that Weber does not teach the

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shapes of the metal burner membrane as claimed in claim 5 and 10-15. These shapes are explicitly taught in the body of the specification and the figures.

4. It is proper to combine Weber with Dewaegheneire because they are both gas burners and therefore analogous art.

5. Applicant's arguments with respect to claims 1-15 have been considered but are moot in view of the new ground(s) of rejection.

### **DETAILED ACTION**

#### ***Claim Rejections - 35 USC § 112***

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claim 10 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The applicant is claiming a base section with a frustoconical shape, however since the base section has a radius of curvature and the definition of frustoconical is a cone with a flat top, it is not possible for the base to be frustoconical. Cones are formed by straight lines. The transition section however is capable of having a frustoconical shape since the slope becomes zero at some inflection point.

8. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 22 and 23 rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not

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described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The ranges  $(0.1 \times R\text{-base} \leq r\text{-transition} \leq 0.7 \times R\text{-base})$  and  $(0.2 \times R\text{-base} \leq r\text{-transition} \leq 0.5 \times R\text{-base})$  are not mentioned in the original specification and it is unclear whether the applicant had possession of the claimed range at the time in which the application was originally filed or whether the range was optimized and narrowed after the application was filed.

***Claim Rejections - 35 USC § 102***

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9. Claims 1 and 19 rejected under 35 U.S.C. 102(b) as being anticipated by US 6,149,424 to Marrecau et al. (Marrecau).

Marrecau teaches:

In Reference to Claim 1

A gas burner, comprising: a metal burner membrane (see Fig. 1, 16 and 18), wherein said membrane of the gas burner comprises a base section (see numeral 20 points to the base section) having a smallest radius of curvature being R-base (radius of curvature of the base 16 near 20); and a closing section (numeral 22 points to the closing section), and a transition region (numeral 24 points to the transition region) connecting said base section to said closing section (the burner membrane 16 and 18 is continuous), wherein said membrane is uninterrupted, and wherein said transition region has having a smallest radius of curvature r-transition (following the radius of curvature of 16, the base radius of curvature is clearly larger than the transition radius of

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curvature) being larger than zero and being smaller than said R-base (the base of 16 is wider than the top of 16).

In Reference to Claim 19

A gas burner as in claim 1, wherein the gas burner is configured such that gas penetrates the membrane before being ignited and flames are visible (based on the excerpt from Marrecau below, the gas penetrates the membrane and the flames are ignited on the membrane inherently).

Marrecau discloses "Radiant burners with a ceramic membrane having some indentations are known in the art, e.g. from U.S. Pat. No.1,731,053. The function of these indentations, however, is to enhance the **flame** stability and to prevent a retrograde movement of the **flame**. A great distinction between radiant burners with a ceramic membrane and radiant burners with a membrane comprising a fabric of metal fibers, is that with a fabric of metal fibers the problem of **flame** stability has already been solved irrespective of the global form of the membrane. So even with a flat membrane no problems of **flame** instability will be present."

***Claim Rejections - 35 USC § 103***

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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11. Claims 2-5, 10-11 and 20-21 rejected under 35 U.S.C. 103(a) as being unpatentable over Marrecau in view of US 6,065,963 to Dewaegheneire (Dewaegheneire).

In Reference to Claim 2

Marrecau discloses a gas burner as in claim I, wherein said membrane comprises a fabric (18, Fig. 1), but does not teach that the fabric comprises stainless steel fibers.

Dewaegheneire teaches a membrane (2, Fig. 1) that comprises a fabric with stainless steel fibers (Col. 2 lines 7-10).

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to combine Marrecau with Dewaegheneire for the purpose of providing the burner of Marrecau with a perforated metal fabric membrane made out of stainless steel. This would have been an obvious design choice, because stainless steel and FeCrAlY are recognized known equivalents. The claim would have been obvious because the substitution of one known element for another would have yielded predictable results to one of ordinary skill in the art at the time of the invention.

In Reference to Claim 3

Marrecau in view of Dewaegheneire discloses a gas burner as in claim 2, wherein said stainless steel fibers are arranged essentially parallel into bundles (Dewaegheneire, Col. 2 lines 15-17).

In Reference to Claim 4

Marrecau in view of Dewaegheneire discloses a gas burner as in claim 3, wherein said bundles are knitted or braided or woven (Dewaegheneire, Col. 1 lines 5-6).

In Reference to Claim 5

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Marrecau in view of Dewaegheneire discloses a gas burner as in claim 2, wherein said membrane further comprises a foraminated plate (16 is a perforated metal screen made out of stainless steel, Marrecau), a foraminated sheet, or a deep drawn or stamped wire mesh for supporting said fabric.

In Reference to Claim 10

Marrecau discloses a gas burner as in claim 5, but does not teach wherein said base section has a frustoconical shape.

Dewaegheneire teaches a metal burner membrane with a frustoconical shape (see Fig. 1-2 where the base of metal burner membrane 2 is formed by a cone and the top of 2 is flat).

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to combine Marrecau with Dewaegheneire for the purpose of providing the burner of Marrecau with a metal burner membrane that has a frustoconical shape at the base of the membrane. All of the claimed elements were known in prior art and one skilled in the art could have combined the elements as claimed by known methods with no change in their respective functions, and the combination would have yielded predictable results to one of ordinary skill in the art at the time of the invention.

In Reference to Claim 11

Marrecau in view of Dewaegheneire discloses a gas burner as in claim 5, wherein said base section has a cylindrical shape (see Fig. 1 where the base section clearly has a cylindrical shape).

In Reference to Claim 20



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A gas burner as in claim 3, wherein said membrane further comprises a foraminated plate (screen 16, Fig. 1 of Marrecau), a foraminated sheet, or a deep drawn or stamped wire mesh for supporting said fabric.

In Reference to Claim 21

A gas burner as in claim 4, wherein said membrane further comprises a foraminated plate (screen 16, Fig. 1 of Marrecau), a foraminated sheet, or a deep drawn or stamped wire mesh for supporting said fabric.

12. Claims 12 and 16-18 rejected under 35 U.S.C. 103(a) as being unpatentable over Marrecau in view of Dewaegheneire and in further view of US 2,822,799 to Sterick (Sterick).

In Reference to Claim 12

Marrecau in view of Dewaegheneire discloses a gas burner as in claim 10, but does not teach wherein said transition region is part of a torus surface delimited by two planes perpendicular to an axis of symmetry of said torus.

Sterick teaches a metal burner membrane with a torus structure (see Fig. 3, a torus is a doughnut like shape with a depressed middle).

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to combine Marrecau in view of Dewaegheneire with Sterick for the purpose of providing the burner of Marrecau with a metal burner membrane that has a torus shape. All of the claimed elements were known in prior art and one skilled in the art could have combined the elements as claimed by known

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methods with no change in their respective functions, and the combination would have yielded predictable results to one of ordinary skill in the art at the time of the invention.

In Reference to Claim 16

Marrecau in view of Dewaegheneire and in further view of Sterick discloses a gas burner as in claim 12, wherein said closing section is a small inverted sphere cap (see Fig. 2 of Sterick which shows a depression in the membrane) such that a depression forms at a center of said burner membrane.

In Reference to Claim 17

Marrecau in view of Dewaegheneire discloses a gas burner as in claim 11, but does not teach wherein said transition region is part of a torus surface delimited by two planes perpendicular to an axis of symmetry of said torus.

Sterick teaches a metal burner membrane with a torus structure (see Fig. 3, a torus is a doughnut like shape with a depressed middle).

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to combine Marrecau in view of Dewaegheneire with Sterick for the purpose of providing the burner of Marrecau with a metal burner membrane that has a torus shape. All of the claimed elements were known in prior art and one skilled in the art could have combined the elements as claimed by known methods with no change in their respective functions, and the combination would have yielded predictable results to one of ordinary skill in the art at the time of the invention.

In Reference to Claim 18

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Marrecau in view of Dewaegheneire discloses a gas burner as in claim 11, but does not teach wherein said transition region is in a form of a circular ridge.

Sterick teaches a metal burner membrane with a torus structure that has a transition region in the form of a circular ridge (see Fig. 3, a torus is a doughnut like shape with a depressed middle).

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to combine Marrecau in view of Dewaegheneire with Sterick for the purpose of providing the burner of Marrecau with a metal burner membrane that has a torus shape with a transition region in the form of a circular ridge. All of the claimed elements were known in prior art and one skilled in the art could have combined the elements as claimed by known methods with no change in their respective functions, and the combination would have yielded predictable results to one of ordinary skill in the art at the time of the invention.

13. Claims 13-15 rejected under 35 U.S.C. 103(a) as being unpatentable over Marrecau in view of Dewaegheneire and in further view of US 3,857,670 to Karlovetz et al. (Karlovetz).

In Reference to Claim 13

Marrecau in view of Dewaegheneire discloses a gas burner as in claim 5, but does not teach wherein said base section has a polygonal cross section, the corners of said cross section being rounded.

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Karlovetz teaches a metal burner membrane (18) that has a base section that has a polygonal cross section, the corners of said cross section being rounded (the cross section of the base in Fig. 8 is polygonal and has rounded corners).

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to combine Marrecau in view of Dewaegheneire with Karlovetz for the purpose of providing the burner of Marrecau with a metal burner membrane that has a polygonal shape with rounded corners. All of the claimed elements were known in prior art and one skilled in the art could have combined the elements as claimed by known methods with no change in their respective functions, and the combination would have yielded predictable results to one of ordinary skill in the art at the time of the invention.

In Reference to Claim 14

Marrecau in view of Dewaegheneire discloses a gas burner as in claim 5, but does not teach wherein said base section has a rectangular cross section, the corners of said cross section being rounded.

Karlovetz teaches a metal burner membrane (18) that has a base section that has a rectangular cross section, the corners of said cross section being rounded (the cross section of the base in Fig. 8 is rectangular and has rounded corners).

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to combine Marrecau in view of Dewaegheneire with Karlovetz for the purpose of providing the burner of Marrecau with a metal burner

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membrane that has a rectangular shape with rounded corners. All of the claimed elements were known in prior art and one skilled in the art could have combined the elements as claimed by known methods with no change in their respective functions, and the combination would have yielded predictable results to one of ordinary skill in the art at the time of the invention.

In Reference to Claim 15

Marrecau in view of Dewaegheneire discloses a gas burner as in claim 5, but does not teach wherein said base section is a truncated pyramid, said pyramid having rounded edges.

Karlovetz teaches a metal burner membrane (18) that has a base section that is a truncated pyramid, the corners of said cross section being rounded (the cross section of the base in Fig. 8 is a truncated pyramid and has rounded corners, a truncated pyramid is a pyramid that has its top removed).

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to combine Marrecau in view of Dewaegheneire with Karlovetz for the purpose of providing the burner of Marrecau with a metal burner membrane that has a base with a truncated pyramid with rounded corners. All of the claimed elements were known in prior art and one skilled in the art could have combined the elements as claimed by known methods with no change in their respective functions, and the combination would have yielded predictable results to one of ordinary skill in the art at the time of the invention.

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14. Claims 22 and 23 rejected under 35 U.S.C. 103(a) as being unpatentable over Marrecau.

In Reference to Claim 22

Marrecau discloses a gas burner as in claim 1, but does not teach wherein the smallest radius of curvature R-base of the base section and the smallest radius of curvature r-transition of the transition region follow the following relation:  $0.1 \times R\text{-base} \sim r\text{-transition} \sim 0.7 \times R\text{-base}$ .

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to optimize the range of R-base and r-transition for the purpose of obtaining desired flame shape and temperature characteristics. Marrecau discloses a burner membrane with uneven flame shape characteristics. It would have been obvious to one of ordinary skill at the time of conception to design and optimize the shape of the burner membrane. This optimization of ranges would not have entailed undue experimentation and would have been within the capabilities of someone of ordinary skill in the art.

In Reference to Claim 23

Marrecau discloses a gas burner as in claim 1, but does not teach wherein the smallest radius of curvature R-base of the base section and the smallest radius of curvature r-transition of the transition region follow the following relation:  $0.2 \times R\text{-base} - r\text{-transition} \sim 0.5 \times R\text{-base}$ .

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to optimize the range of R-base and r-transition for the purpose of obtaining desired flame shape and temperature characteristics. Marrecau discloses a burner membrane with uneven flame shape characteristics. It would have been obvious to one of ordinary skill at the time of conception to design and optimize the shape of the burner

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membrane. This optimization of ranges would not have entailed undue experimentation and would have been within the capabilities of someone of ordinary skill in the art.

### *Conclusion*

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a).

Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DANIEL A. BERNSTEIN whose telephone number is (571)270-5803. The examiner can normally be reached on Monday-Friday 8:00 AM - 5:00 PM EDT.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kenneth Rinehart can be reached on 571-272-4881. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

DAB

/Kenneth B Rinehart/  
Supervisory Patent Examiner, Art Unit 3743